(12) UK Patent Application (19) GB (11) 2 205 236 (13) A

(43) Application published 7 Dec 1988

(21) Application No 8710727

(22) Date of filing 6 May 1987

(51) INT CL⁴
A47C 27/08

(52) Domestic classification (Edition J):
A4M 1A 1B11 1B1 1B2 1B3 1B4 1B7 1B9 1BX

(56) Documents cited
GB A 2194883 GB A 2113990 GB A 2106779
GB A 2074034 GB A 2047088 GB 1285552
GB 0758091 GB 0646908 GB 0548990
GB 0270072 GB 0258077

(58) Field of search
A4M
Selected US specifications from IPC sub-classes
A47C A47G

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(54) **Inflatable back support device**

(57) The device comprises an inflatable envelope of foldable plastics material formed of a rectangular back panel 2, wedgeshaped side panels 3, 4, and a front panel 5 joined e.g. by heat welding. Connecting panels 10, 11 are located inside the envelope joining the front and rear panels to constrain the degree to which those walls can move apart. Thus, when inflated, the front face of the support has an upright depression 17 to receive the back of the user. Closable means 16 comprising a combined nozzle and stopper assembly are provided through which the envelope can be inflated and deflated. The device is for insertion between a seat back and the back of a seated person. When deflated the device can be folded up into a pocket-sized package.

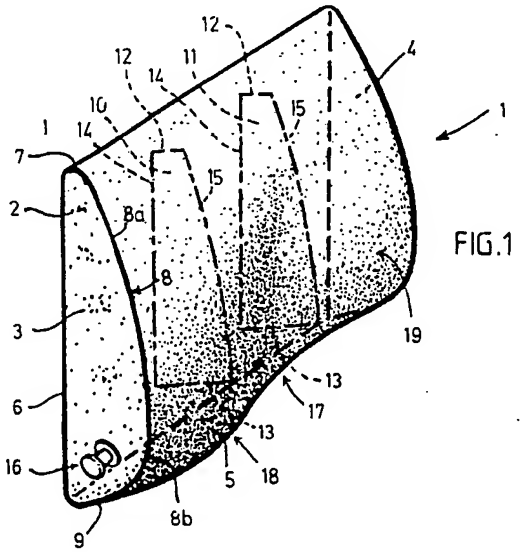

FIG.1

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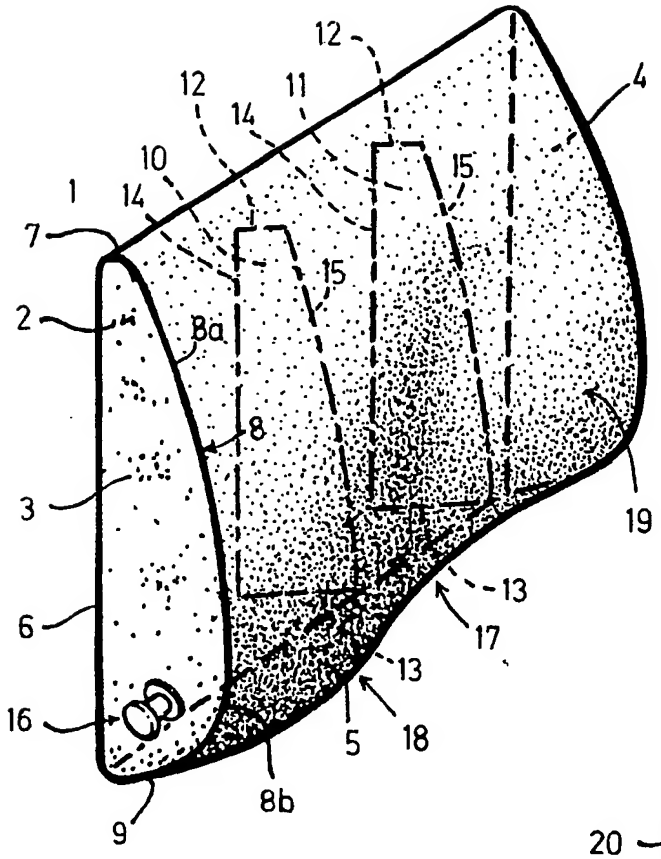

FIG.1

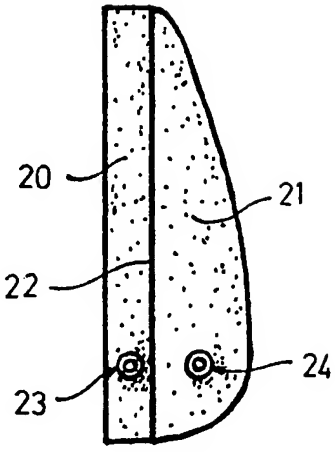

FIG.2

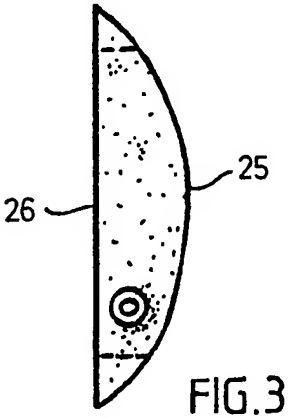

FIG.3

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BACK SUPPORT DEVICE

There are already on the market various devices for insertion between a seat back and the back of a seated person so as to provide additional back support. Such devices are of particular value in easing various back complaints, but they are bulky and awkward to carry around and they often have to be left behind on a long journey for example.

The present invention is concerned with a form of back support which is easily carried around in the pocket or in a handbag.

According to the present invention there is provided a personal back support device for insertion between a seat back and the back of a seated person, comprising an inflatable envelope of foldable sheet material, andcloseable means through which the envelope can be inflated and deflated, the arrangement being such that, when deflated, the device can be folded up into a pocket-sized package.

The envelope preferably contains at least one foldable connecting member joining the front and rear walls of the envelope so as to constrain the degree to which those walls can move apart, such that, when inflated, the front face of the support has an upright depression to receive the back of the user

The invention will now be exemplified in the following description to be read in conjunction with the accompanying drawings, in which:

Figure 1 is a perspective view of a portable back support device in accordance with the invention,

Figure 2 is an end view of a similar device, and

Figure 3 is an end view of another such device.

The device of Fig. 1 comprises an inflatable envelope 1 formed of flexible sheet material such as pvc or other plastics. The envelope comprises a rectangular rear panel 2, two end panels 3, 4 of substantialy the same size and shape, and a front panel 5 which in addition to forming the front face of the device is extended to form the top and bottom faces. The side panels are generally wedge shaped and have a substantially straight rear edge 6, the upper end of which joins a short forwardly directed edge 7. This in turn joins the front edge 8 of the panel which for the major part of its length extends away from the rear edge 6 in a shallow arc 8a but which decreases in radius of curvature along the lower portion 8b to lead directly into a substantially straight lower edge 9. This lower edge is considerably longer than the upper edge 7. All four panels are secured together in an air-tight manner by heat welding.

Internally of the envelope there are two connecting

panels 10, 11. These are of the same material and are substantially of the same size and outline as the end panels 3, 4 except that they each have a top and bottom portion cut off along parallel top and bottom edges 12, 13. These connecting panels are arranged substantially parallel to the end walls 3, 4 and are spaced apart substantially centrally of the envelope. They are joined by heat welding to the front and rear panels 5 and 2 along their front and rear edges 14, 15, the top and bottom edges 12, 13 remaining free. A combined nozzle and stopper assembly 16 is heat welded into the lower portion of one of the side walls 3.

The device is inflated by blowing air through the nozzle of assembly 16 until the envelope is inflated to the required amount. The air is able to pass around the upper and lower edges 12, 13 of the internal panels 10, 11 to fill the entire envelope. However, the connecting panels 10, 11 constrain the degree to which the front and rear panels 5, 2 can move apart in the mid region 17 of the support. On the other hand, the regions 18, 19 between the internal panels 10, 11 and the end panels 3, 4 respectively are free to distend outwardly on either side of the constrained upright mid region 17. Once the device has been inflated to the required amount the stopper is inserted into the nozzle and the nozzle is pushed in out of the way in known manner.

The device is inserted between the back rest of a chair and the lower lumbar region of the user to provide support for the user's back. The amount of air within the envelope can be varied to suit the back condition of the user and/or the type of chair with which it is

being used. However, since the total amount of air within the envelope remains constant once inflated the device still provides firm back support throughout a renge of degrees of inflation.

The device could have only one internal connecting panel, or it could have more than two, although two or three are probably optimum. The connecting panels could be welded to the external envelope around their entire periphery to form separate compartment, each of which is provided with a separate nozzle and stopper assembly, although in this case the panels are preferably provided with through-apertures. The use of a single compartment is preferred for speed and ease of inflation and to permit equalisation of the pressure exerted by the device over the back region of the user.

Adhesive could be used in place of heat welding. Also, the front and rear panels could be formed of a single panel.

The device of Fig. 2 is basically of the same construction as the support of Fig. 1 except that the envelope is divided internally into separate front and rear compartments 20, 21 by an internal dividing panel 22. Each compartment is provided with a separate nozzle and stopper assembly 23, 24. This device is useful where the forward movement of the user is restricted, e.g. in some airline seating. In such a case the rear compartment need not be inflated so that the user is thrown forwards to a smaller degree. The internal connecting panels could again be of the shape shown in outline in Fig. 2. Such panels could also be provided in the rear compartment, or they could be

omitted as shown.

The device of Fig. 3 is suitable for providing support for the high lumbar region and in end view is of double wedge shape to fit neatly into the small of the back. The front edge 25 forms an arc of substantially constant radius between the upper and lower edges of a substantially straight rear edge 26. The shape of the internal panels is again indicated in outline.

* * * * * * *

CLAIMS

1. A personal back support device for insertion between a seat back and the back of a seated person, comprising an inflatable envelope of foldable sheet material, and closable means through which the envelope can be inflated and deflated, the arrangement being such that, when deflated, the device can be folded up into a pocket-sized package.

2. A device according to Claim 1, in which the envelope is formed of plastics sheet material.

3. A device according to Claim 2, in which the envelope is formed of separate panels secured together by heat welding.

4. A device according to any preceding claim, in which the envelope is formed of a substantially rectangular rear panel, two end panels of substantially the same size and shape, and a front panel.

5. A device according to any preceding claim, in which the envelope is formed of a panel forming a substantially rear panel portion and a front panel portion, and two end panels of substantially the same size and shape.

6. A device according to Claim 4 or 5, in which the end panels each comprise a substantilly straight rear edge, the upper end of which joins a short forwardly directed edge which in turn joins a front

edge of the panel which for the major part of its length extends away from the rear edge in a shallow arc but which decreases in radius of curvature along its lower portion which in turn leads into a substantially straight lower edge that meets the lower end of the rear edge.

7. A device according to Claim 6, in which the lower edge of each end panel is considerably longer than its upper edge.

8. A device according to Claim 4 or 5, in which each end panel is substantially symmetrical and comprises a substantially straight rear edge which at its upper and lower ends joins an arcuate front edge.

9. A device according to any preceding Claim, in which the envelope contains at least one foldable connecting member joining the front and rear walls of the envelope so as to constrain the degree to which those walls can move apart, such that, when inflated, the front face of the support has an upright depression to receive the back of the user

10. A device according to Claim 9, in which the connecting members comprise panels formed of similar material to the envelope.

11. A device according to Claim 9 or 10, in which there are gaps permitting air to flow from the closable means past the connectng members so that the envelope contains a single compartment.

12. A device according to Claim 9 or 10, in which

the connecting members divide the envelope into a plurality of compartments each provided with separate closable means.

13. A device according to any preceding claim which includes a separate rear compartment provided with a respective closable means.

14. A device according to any preceding claim, in which the or each closable means comprises a combined nozzle and stopper assembly.

15. A personal back support device for insertion between a seat back and the back of a seated person, substantially as described with reference to Figures 1, 2 or 3 of the drawings.

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